

# Influence of polyethylene microplastics on freshwater organisms

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## Introduction

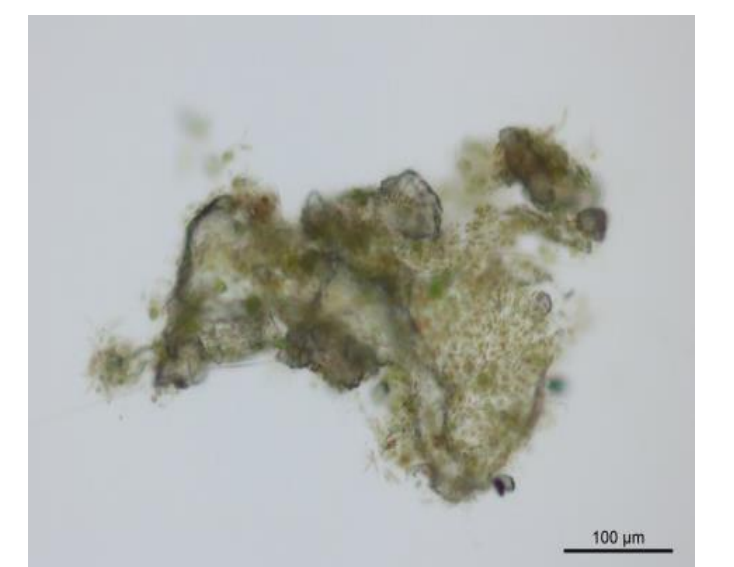
Among many human impacts on nature, the accumulation of plastic debris has become one of the most obvious and problematic global issues. Durability, unsustainable use and inappropriate waste management cause extensive accumulation of plastics in the environment. In nature, plastics are converted by environmental conditions into smaller pieces. Fragments, typically smaller than 5 mm, are called microplastics (MP). Beside the degradation, MP is also produced and used, for example in products for personal care. MP is of a special concern because it has bioaccumulation potential, contains chemical additives and can adsorb organic contaminants.

**Aim:** To assess the effects of polyethylene MP and polyethylene MP with freshwater biofilms on selected species of freshwater organisms; water fleas (*Daphnia magna*) duckweed (*Lemna minor*) and zebrafish embryos (*Danio rerio*).

## Methods

### Water sources

1. Ljubljana - Vrhnika (**Lj-spring**)
2. Ljubljana - city centre (**Lj-city**),
3. Wastewater treatment plant effluent (**WW**)
4. Landfill leachate water (**LW**).



Water sources

MP extracted from peeling

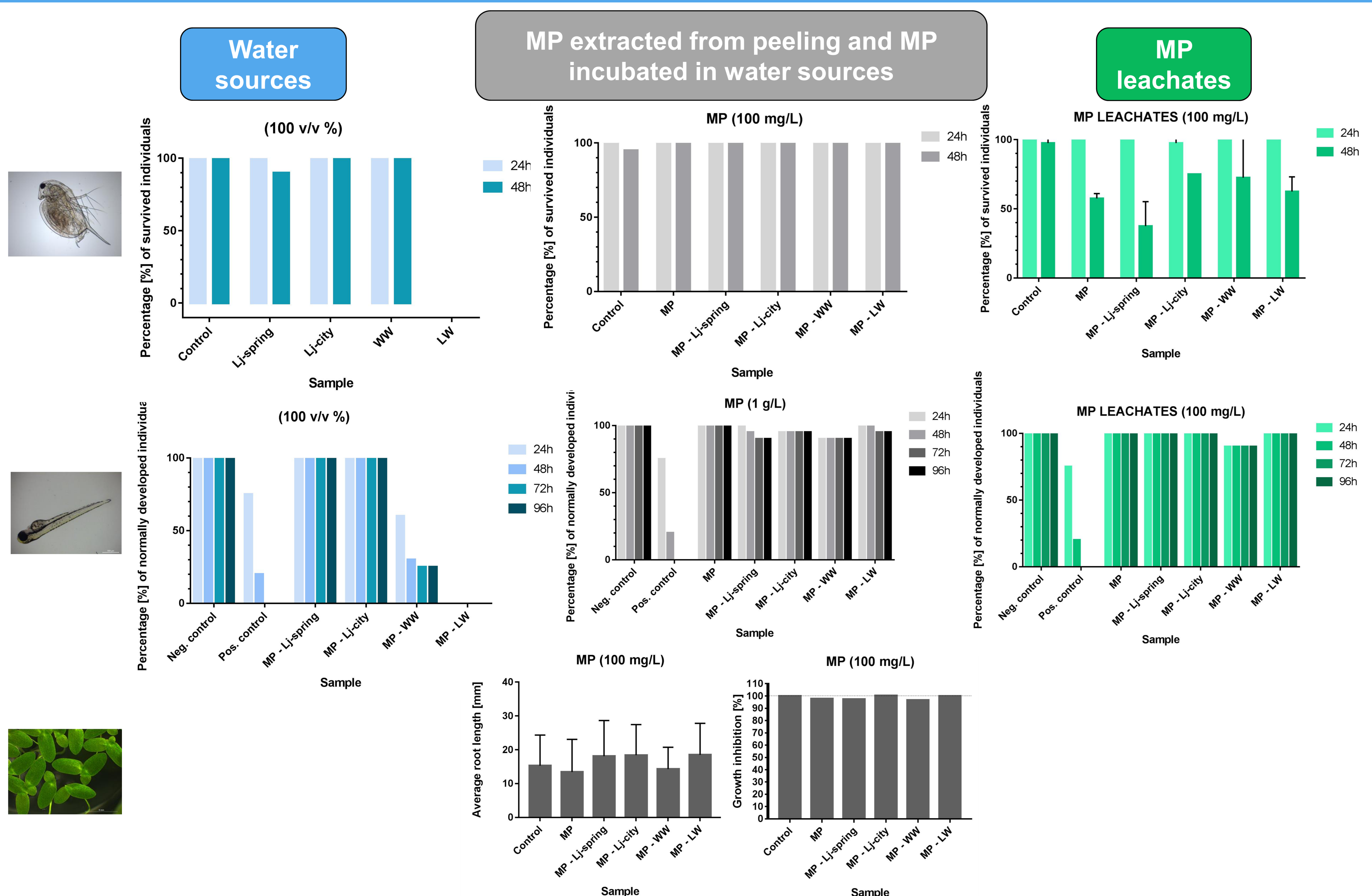
MP incubated in water sources

MP leachates

**Fig 1.** Schematic overview of the samples tested with selected organisms.

We focused on the survival rate of water fleas, growth inhibition and root length of duckweed and development and survival rate of zebrafish embryos

## Results



## Conclusions

- Polyethylene microplastics had no effect on the survival of water fleas, development of zebrafish and growth of duckweed.
- Also, microplastic incubated in different types of water had no effect on the test organisms.
- The only observable effect was found when the leachates from microplastic were tested. The survival of water fleas was affected by these samples. This needs to be further investigated.

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